TRAFFIC-RELATED AIR POLLUTION AND RISK OF CONGENITAL ANOMALIES IN BARCELONA

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Background and aim: There is a growing number of studies on ambient air pollution and risk of congenital anomalies. In a recent meta-analysis, NO_2 and SO_2 exposures were related to increases in risk of coarctation of the aorta and tetralogy of Fallot, and PM_{10} exposure to an increased risk of atrial septal defects. So far no refined spatial exposure models have been used in this field. We conduct a study of traffic-related air pollution exposure estimated by land-use regression models and risk of congenital anomalies in Barcelona.

Method: Cases with congenital anomalies and control births are selected from the population-based Barcelona Birth Defects Register (REDCB) between 1995 and 2006. In Barcelona, traffic related air-pollution levels have been measured and refined exposure modelling techniques are employed to develop a detailed spatial land-use regression (LUR) model, within the framework of ESCAPE Project. The geocode of the maternal residence at birth will be linked to the exposure estimates for PM_{10}, $PM_{2.5}$, NOx and NO_2. Logistic regression models will analyse the risk of congenital anomaly groups and air pollution exposures.

Results: A total number of 3129 cases have been registered, the most frequent groups are congenital heart defects (34%), urinary tract defects (19%), limb reduction defects (13%), and central nervous system defects (13%), 25% of cases had a chromosomal anomaly. The mean maternal age was 32 years both for cases and controls. Control mothers were higher educated (43% vs 39% in cases had completed the university) and lived in less deprived areas. The Barcelona LUR models explained 72% of intraurban NO_2 variability, 79% of $PM_{2.5}$ variability. Findings on the association between exposure to traffic-related air pollutants and risk of specific congenital anomalies will be presented.

Conclusion:
This study will allow corroboration of the findings of previous studies, using more refined spatial models of air pollution.